



Gobi Regional Economic Growth Initiative

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By



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GOBI INITIATIVE PHASE II – YEAR TWO - FOURTH QUARTER REPORT

INTRODUCTION:

The Gobi Regional Economic Growth Initiative-Phase II (Gobi II) project began on January 8, 2004, funded under Cooperative Agreement #438-A-00-04-00002-00. The project is being implemented by Mercy Corps in partnership with Pact, Inc.

SECOND YEAR SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Overall, Mercy Corps/Mongolia believes that Gobi Initiative (Phase II) had a very successful second year. A key component of the Phase II strategy is herder business diversification and expansion. Results from the second year of business plan implementation by the herder groups revealed that the majority of groups successfully implemented their business plans and generated significant sales. Another important result was that profitability and marketability of production did not seem to be a problem; whatever was produced was sold, and at prices that generated profits for the business.

As a result, **MC/Mongolia remains committed to its diversification/expansion strategy**, and will work with approximately 170 herder clients in Year Three of the program. The majority of these herders have already developed their business plans and the program staff has begun reviewing the plans.

Gobi Initiative (GI) uses sales generated from new business activities outlined in the formal business plans developed under the project as an indicator of success. During the year ended December 31, 2005, total sales worth MNT 1,214,505,452 (\$1,012,000) were generated by the 162 GI supported herder businesses, against a very ambitious plan of MNT 1,282,655,620 (\$1,068,900); these sales were directly related to the activities noted in the business plans. In addition, the program worked with a number of non-herder businesses during the year, and the business planning process was better streamlined with a total of twenty five businesses successfully implementing their plans. Sales by these non-herder businesses totaled MNT 628,550,200 (\$524,000) as of December 31, 2005.

Total new/expanded business activity sales, generated as a result of GI-provided assistance during 2005, were MNT 1,843,055,652 (\$1,536,000) as of December 31, 2005, bringing total sales for the first two years of Gobi II to MNT 2,620,424,812, or \$2,183,000. Against cumulative Cooperative Agreement spending of \$2.5 million (net of PACT project sub-component) for 2004 and 2005, MC/Mongolia believes that this is a significant accomplishment, particularly since these businesses should continue to earn revenue from these business activities in 2006 and well beyond, with or without GI assistance.

One of the highlights of the year was the major market events that took place during September in all GI aimags. The events this year were a great success, attracting large crowds from across the aimags. The Prime Minister of Mongolia, Ts. Elbegdorj, the US Ambassador, the USAID Mission Director and other senior officials from the US Embassy led the official opening of the Dundgovi market event on the 24th of September and visited the market stalls, talking to exhibitors and tasting the products. Also, the Members of Parliament from Umnugovi, Govi-Altai and Dundgovi aimags attended the market events in their respective aimags. The six events in 2005 generated grand total sales of MNT 225 million (\$200,000) nearly doubling the 2004 sales of MNT 114.7 Million (\$102,000). Local products offered included dairy goods; bread, cookies and pastries; vegetables; wool and cashmere; hides and leather products; felt and felt products; wood/metal products; several types of handicrafts; wicker items; and construction material. Dairy and vegetable products were in highest demand and most exhibitors of these products had sold out within the first day of the events. A total of 1,034 exhibitors participated in the six events. All of the GI cooperating clients participated, promoting and selling their goods and services to the general public, and other herder and non-herder businesses in the aimags participated as well. The banks actively participated and promoted their services and loan programs. All of the aimags organized additional activities, including sports competitions, art contests and English lessons, increasing both the scale and the popularity of the events. The market events will continue in Year Three, again with minimal support from GI: the local government and other stakeholders will be involved in the planning and organization of the events at the end of the summer.

The loan guarantee mechanism (USDA funding) continues to be a crucial component of the overall strategy for supporting the herder diversification activities. Through the end of Year Two, the provision of "additional cash collateral" for client loans has enabled 200 project clients to secure MNT 569,059,000 (\$474,200) in affordable commercial financing. This innovative product has resulted in greater competition between the banks operating in the rural areas and, as a result, market sensitive interest rates that support rather than inhibit rural business development. Among the clients who have accessed loans from the commercial banks, there has only been one default; this client lost the majority of his harvest due to bad weather destroying his cultivated oat crops.

In December 2005, Mercy Corps initiated an evaluation of the loan guarantee program. Although not yet finalized, the initial evaluation findings are significant. These findings include:

- More than 43% of the borrowers had never received a commercial loan previously;
- The average loan duration for Mercy Corps clients was 15 months, a more appropriate duration for businesses than the less than 9 months for non-Mercy Corps clients;
- Although banks do accept non-cash collateral to secure loans, they often significantly under-value the collateral, thus reducing the amount that can be borrowed to below the required amount to properly finance the business;
- 94% of Mercy Corps clients are confident that the banks would lend to them again, and nearly 40% believe that such loans could be obtained without Mercy Corps financial assistance; and
- More than 50% of the clients are now confident to interact with the banks on loan applications and negotiations without Mercy Corps assistance.

Capacity building of local training and technical assistance providers has been an area to which GI program staff has committed both significant time and resources. During this year, the "aimag-based consultant certification" process was developed and implemented. As a result, twenty-eight aimag-based consultants were certified by the program and have continued to provide technical assistance to program clients. The process, after some initial resistance, has been well accepted at the aimag level and has provided the GI staff with benchmarks to measure provider technical knowledge and training delivery skills. In addition to the certification, a number of training activities have been organized, primarily in vegetable cultivation and dairy processing, providing consultants and GI program officers with the opportunity to improve their skills and technical knowledge.

The increased focus on alternative business information dissemination channels, beyond the RBN magazine, has been a successful strategy followed in Year Two. The increase in RBN radio and television programming, combined with a fine-tuning of message content and the way in which those messages are delivered, has shown results in terms of listener/viewer recognition and awareness, and acceptability and interest on the part of mainstream media. During Year Two the production of the 27-part TV drama, "Endless Labyrinth", was a great success with large viewer numbers. The radio drama "Herder from the Future" is now running its last series after five years, with the final episodes to be broadcast in April 2006.

With the successful implementation of the first two years of the program, plans for Year Three, and into Years Four and Five, can be summarized as follows :

- GI will not seek to significantly increase the total number of annually-supported project clients beyond the current 250, but will instead divide project efforts between adding new clients and focusing on the remaining steps needed to "graduate" prior year clients;
- GI will focus greater efforts on cooperative institutional development, including internal management and "succession planning", key to ensuring sustainable businesses that will continue beyond the end of Gobi II;
- GI will increase efforts to enhance the skills and marketability of local training and technical assistance providers, key to ensuring some degree of sustainable business development services (BDS) beyond the end of Gobi II;
- GI will increase its efforts to develop local production input and equipment suppliers, critical for continued new business development and existing business growth;

- GI will focus on more targeted local government capacity-building - at the soum level related to land use issues and at the aimag level related to tax reporting, particularly by new businesses;
- GI will bring the Gobi Forage forecasting activity fully on-line, including the critical information dissemination component; and
- GI will continue support for the new educational television drama and will "update" its radio programming, while at the same time increasing efforts to better document (a) listener/viewer understanding of the key messages that are being delivered, and (b) use of the business information that is being disseminated through these media products.

FOURTH QUARTER PROGRAM HIGHLIGHTS

The fourth quarter program highlights include:

- Mercy Corps/Mongolia met with President Enkhbayar on November 9th. The purpose of the meeting was to brief the President on the activities of Mercy Corps in Mongolia, particularly those related to rural economic development. The President praised the work of Gobi Initiative in "helping herding families to sell livestock-origin materials more profitably" and "improving the living standards of rural residents". The meeting was covered by local television stations and newspapers.
- The Bayanhongor aimag government, in cooperation with Gobi Initiative, organized the "Bayanhongor Trade Fair" in Ulaanbaatar on the 22nd and 23rd October. A total of 150 businesses from all 20 soums participated in the event, generating sales of MNT 32.5 million (\$27,000). Dairy products were in highest demand; all were sold out within the first day. Jargalant Sumber Hairhan cooperative, a GI client, sold MNT 2.5 million (\$2,000) of fresh dairy products at the event. On both nights, a sold-out concert, "Melodies of Bayanhongor" featured artists and singers from Bayanhongor. The costs for the event were covered by the aimag government (60%), the BH Advocacy Group based in Ulaanbaatar (28%) and Gobi Initiative (12%).
- Training for twelve staff from the Dundgobi, Umnugobi, Uvurhangai, and Bayanhongor Aimag Veterinary Laboratories was conducted from October 17 to November 4. The training focused on diagnostic tests for infectious disease monitoring, epidemiological principles and food hygiene. These trainings complement the new laboratory equipment that is currently arriving in country and will be installed in the first quarter of 2006, resulting in fully operational veterinary laboratories serving animal and human health needs in these aimags.
- GI program Officers and five GI herder clients participated in a workshop entitled, "Community-Based Tourism in Mongolia - Current Trends and Future Directions". The workshop was designed to provide participants with an opportunity to discuss the obstacles and challenges faced by small herder-operated ger camps and other tourism-based activities, and to discuss the creation of a member-based umbrella organization based in Ulaanbaatar. The participants all stated that the main challenge they face is marketing their operations and securing guests.
- A training workshop on land use laws and regulations was held for Uvurhangai and Dundgovi government officials. During the workshops, several important findings were noted for further follow-up: (a) some herders have now moved to adjoining or even distant soums on a more permanent basis. The government will need to decide whether or not to formally re-register them at their new locations, (b) many herders still do not understand why they should obtain formal land use rights for their historical winter and spring grazing areas. Government officials believe that there would be fewer land disputes if they were to do so, (c) many rural residents still do not know who they should contact and what the fees and taxes would be if they were to undertake crop production and hay preparation.
- GI client selection for 2006 was completed in December. The project will work with 170 herder groups including 50 new clients.

- RBN finalized the production of the final series of the "Herder from the Future" radio drama (episodes 101-126) for national broadcasting. Pact is currently developing a radio program that will replace "Herder from the Future".

INTERMEDIATE RESULT 1.3-1 Increase in Number of New and Strengthened Businesses

Activity One: Business Plan Development

During the fourth quarter, herder businesses have been busy with final sales of produce and preparing their livestock for the winter. Tables 1 and 2 provide a breakdown of the total sales figures for the year from all the herder clients who cooperated with GI. A number of the herder businesses that cultivated vegetables built cellars during the quarter and have stored part of their harvest, with the intention of selling these vegetables when prices increase during the winter. The dairy businesses continue to sell their production, although that production is decreasing as winter advances and the animals reach the end of their lactation periods.

Table 1 - Planned vs. Actual Sales by Aimag

Aimag	Planned Sales- CY2005 (MNT)	Actual Sales- CY2005 (MNT)	Reasons for Variance
Umnugovi	232,052,200	229,903,228	Due to raw timber price increases, sales of wooden goods have reduced and, therefore, "Harmagtain Buur Hairhan" coop's production volume and sales decreased. "Galyn Hugjil" coop's camel milk production sales plan was reduced due to the migration of its members to distant pastures and hence less milk available for sale.
Dundgovi	238,861,800	193,859,504	Due to the drought in the aimag, many herders moved to far pastures. With the poor rangeland, the milk production of the animals decreased and herders had fewer products to sell.
Uvurhangai	359,406,270	367,457,030	Planned sales were achieved and even surpassed by the herder clients.
Govi-Altai	195,003,100	187,266,310	The vegetable production of the herder clients was lower than predicted due to poor rainfall. In addition, one cooperative with a business plan for hay production also had lower sales than planned, due to poor rainfall and hence poor growth of the grassland the cooperative was unable to harvest the amounts of hay as planned.
Bayanhongor	133,350,200	131,879,700	"Ikh Bogd Urgan" cooperative had a business plan to produce compressed fuel. They ordered production equipment from China that was never delivered. As a result, the cooperative used old machinery with lower production capacity, resulting in lower production and sales.
Govi-Sumber	120,335,000	108,467,850	"Hudulmuriin Och" veterinary business did not reach their sales targets and had problems receiving payment from the aimag government for contracted veterinary work provided to the herders in the aimag.
TOTAL	1,279,408,570	1,218,833,622	

Table 2 - Planned vs. Actual Sales by Business Activity

Business Type	# of groups/coops	Sales Income CY2005		
		Planned MNT	Actual MNT	%
Vegetables and fodder production	43	192,485,350	158,708,490	82,5
Dairy products	38	206,932,500	204,839,080	99,0
Meat	16	176,056,350	146,469,650	83,2
Felt production	15	58,286,500	54,160,780	92,9
Veterinary	20	140,482,170	135,881,878	82,5
Tourism (Ger/summer camps, hotels and restaurants)	11	77,359,000	69,444,900	89,8
Production, service (boot making, Ger furniture, skins and leather production)	10	62,956,100	42,985,150	68,3
Trade and services (gas stations, soum and	7	356,705,600	398,749,694	111,8

bagh shops and service providers)				
Animal breeding	2	8,145,000	7,594,000	93,2
TOTAL	162	1,279,408,570	1,218,833,622	95,3

Sales revenue targets and actuals for individual herder clients, through December 31st, are included in Appendix 1.

Eighteen private veterinary businesses developed business plans and received technical assistance in 2005. During this reporting period, all businesses made strides toward final implementation of their business plans drafted during the first quarter of 2005. A total of six businesses have repaid their loans, while the remainder of businesses is scheduled to repay as planned in the first and second quarters of 2006. All eighteen businesses have been linked into continuing education training provided by V.E.T Net under the RASP project, and six veterinary businesses from Umnugobi and Bayanhongor received follow up field training under that project during this quarter.

GI has made a significant effort to document why some herder groups experienced difficulties in meeting their business objectives while others succeeded beyond planned expectations. The results from three successful groups, and an indication as to why we believe they did well, are as follows:

The "Gurvan Tsahir" cooperative in Bayanhongor aimag, headed by E. Olzvoi, developed a vegetable production business plan and planted vegetables and fruit berries on 2.1 ha of land. The cooperative harvested 14.1 tons and generated sales of MNT 5,812,000. The GI representative office, in order to promote the experience of "Gurvan Tsahir" cooperative to others, organized an on-site demonstration and training in August for 14 neighboring agricultural cooperatives. The "Gurvan Tsahir" cooperative also participated in all of the market fairs and was selected by the local authorities as the "Best Management Cooperative" in Bayankhongor aimag in 2005.

GI has attributed the success of this cooperative to; a) their increased experience in cultivating vegetables resulting in good yields, b) good cooperation among the members, c) the good quality of their vegetables and packaging and labeling of products for the market trade fairs and d) the appropriate and effective GI technical assistance provided.

In Tsogt-Tsetsii soum of Umnugovi aimag, seven herder household members gathered and established "Enger Tsagaan Ovoo" group in 2001. The group started to cooperate with GI in 2001 and in 2003 they established "Enger Tsagaan Hairhan" LLC, a gas station in the soum. During 2005, the group improved their gas station operations, built a loyal client base and gained experience in competing with the local NIC station. The company offers home delivery services for fuel to soum based businesses and organizations and as an incentive offers free basic vehicle maintenance to their regular customers. The company has now "graduated" from the program and will continue to run their business without any direct support from GI in 2006.

GI has attributed the success of this group to; a) their increased experience and capacity in running a successful gas station, b) good cooperation among the members, c) the group's ability to establish good market linkages and d) the appropriate and effective GI technical assistance provided.

In Govi-Sumber aimag, the "Heentsii" group headed by G. Mainbayar developed a business plan to establish a micro dairy. The group identified suitable land situated two kilometers from the aimag center, obtained the necessary land use permits for 500m² of land for 60 years from the aimag and soum government. On the land the group established their micro dairy consisting of fencing, a barn for 15 cows, a well for water and a milk processing house. The group purchased 10 Simmental and Alatau breed cattle from Batsumber dairy farm in Tuv aimag. The total investment was MNT 20 million and the group took a loan of MNT 10 million from ???Bank. The group supplies fresh dairy milk products to the residents of Choir town and Sumber soum. In addition, they prepared 10 tons of hay and 5 tons of fodder for winter feeding of the dairy cows. Total sales generated during the year were MNT 17,930,500.

GI has attributed the success of this group to; a) excellent technical knowledge related to raising productive dairy animals, b) involvement in the business by all group members, c) sound business relationships with existing and potential buyers, and d) good business and financial management.

From the original 162 groups and cooperatives collaborating with GI during 2005, 123 groups will either revise or develop new business plans for 2006 and will continue to work with GI. 39 of the herder groups/cooperatives will not continue with GI, either because they (a) feel they no longer require

assistance, (b) are really single family operations as opposed to a functioning group or cooperative, (c) are unwilling to become a formal legal entity, despite being involved in commercial activities, and/or (d) lack the motivation and interest deemed necessary to succeed.

During the fourth quarter, program staff initiated the selection process of new herder groups and cooperatives that will participate in the program in CY2006. They traveled out to the soums to further promote the program and to meet with herder groups that had expressed an interest in cooperating with the program. During this assessment period, 47 new herder groups and cooperatives were initially selected, based on the following criteria:

- Previous experience in working together,
- A formal or informal leader, acknowledged, respected and supported by fellow group members,
- Ability to reach collective agreement on a business activity to be implemented with GI support,
- Agreement within the group that workload and business profits need to be shared,
- No less than six households comprising the group,
- No less than 800 animals owned by group members, and
- A willingness to become a formal legal entity if not one already.

Each aimag office has since conducted intensive business plan training for two representatives from each of the newly selected herder groups and, at the end of the training; the participating herders prepared their first draft business plans. Eligible veterinary businesses were also identified during the field travel; these veterinarians have developed their 2006 business plans with GI technical assistance.

GI program staff has begun reviewing the draft plans, working with the herders to revise them as required. To date, 47 new herder groups have developed business plans and 123 herder cooperatives from 2005 have either revised or developed new business plans. The initial number of herder groups and cooperatives with which the program will work during CY2006 is therefore 170.

Business Planning for Non-herder Businesses

During the fourth quarter, the aimag-based business officers worked with nine non-herder businesses to develop and complete their business plans. Table 3 provides details of the businesses that have completed their business plans and started with implementation of their plans during the fourth quarter

Table 3: Businesses that have completed their business plans during the fourth quarter

#	Aimag	Business Name	Activity	Legal Status
1	UG	Umniiin Govi	Transportation Services	LLC
2	BH	Sulden Tenger	Animal By-product Processing	Coop
3	BH	Borgiot	Dairy Production	Coop
4	BH	Khugjliin Deej	Salt Purification	Coop
5	BH	Munkhiin Khuch	Bakery	Coop
6	BH	Ikh Uul	Meat Processing	LLC
7	BH	Nomin Khukh	Bakery	Coop
8	GS	Barsmoriton	Bakery	LLC
9	GS	Goviin Tuya	Tailor	Partnership

During 2005, the program worked with a total of 35 non-herder businesses to develop their business plans. Twenty-nine businesses have subsequently started implementation of their plans and have received technical assistance over the course of the year. The rest of the businesses that have developed their plans will begin implementation in 2006.

Table 4: Details of businesses that developed business plans and received technical assistance in 2005.

#	Aimag	Business Name	Activity	Legal Status
1	BH	Naran Uul	Construction Materials	Coop
2	BH	Gurvan Ekht	Bakery/Fine Pastry	Coop
3	BH	Zun Bid	Meat Processing	Coop
4	BH	Gariin Buyan Baidrag	Bakery	LLC

5	BH	Nasan Khishig	Bakery	Coop
6	BH	Sulden Tenger	Animal By-product Processing	Coop
7	BH	Khugjliin Deej	Salt Purification	Coop
8	BH	Borgiot	Dairy production	Coop
9	BH	Ikh Uul	Meat processing	LLC
10	BH	Nomin Khukh	Bakery	Coop
11	BH	Munkhiin Khuch	Carpentry	Coop
12	DG	TEBBE	Carpentry	LLC
13	DG	Ulzii Dundgovi	Ger Camp	LLC
14	DG	Uugandalai	Airag Bar	LLC
15	DG	Itgel Zutgel Khugjil	Tailoring, sewing	Partnership
16	DG	Zambagin Tal	Hotel/restaurant	LLC
17	GA	Buren Chandmana	Hotel	LLC
18	GA	Arvin Dult	Fuel production	LLC
19	GA	Buural Yesun Khusel	Chicken farm	LLC
20	GA	Dashmyangan	Tourism	LLC
21	GA	Bebil	Carpentry	LLC
22	GS	Lucky Dent	Clinic	LLC
23	GS	Emeeliin Khishig Khond	Farming	Partnership
24	GS	Ergel Bogdin Zoo	Bakery/Fine Pastry	Partnership
25	GS	Ulzii Khugjil	Construction Materials	LLC
26	GS	Barsmoriton	Bakery	Partnership
27	GS	Goviin Tuya	Tailor	Partnership
28	UG	Gal Munkh	Furniture production	LLC
29	UG	Galbin Ulaan	Wool Processing	Partnership
30	UG	Umniin Govi	Transportation Services	LLC
31	UG	Mandal Goyol	Hairdressing and beauty	LLC
32	UH	Tsarskhangai	Carpentry	LLC
33	UH	Suun Dalai Travel	Tourist camp	Coop
34	UH	Tu-Ba-Se	Tourist camp	LLC
35	UH	Itgel Uv	Bakery/Fine Pastry	LLC

Activity Two: Cooperative Formation and Development

Of the original 162 groups that developed business plans during 2005, 90 were existing legally registered business entities (cooperatives, limited liability companies and partnerships) and the remaining 71 were herder groups. During this reporting period, a total of nine herder groups became formal cooperatives/partnerships, completing their registration with the government authorities (four groups in GA, one group in DG, three groups in UH and one group in UG). This was accomplished through assistance provided by GI aimag staff and 21 organized training events covering essential cooperative-related topics such as: cooperative management, structure and leadership, operations and marketing, record keeping and reporting, and taxation and regulatory compliance. The program completed the assessment of the organizational development and future leadership needs of cooperatives in the previous quarter. The program plans to finalize a detailed work plan aimed at building the institutional capacity of the GI supported herder cooperatives in Year Three. The areas identified for further technical assistance include; training on the legal environment and regulations governing the establishment of a cooperative (cooperative laws, tax regulations etc), cooperative management and financial management training, and marketing assistance.

Table 5: Total Numbers of Herder Groups and Cooperatives/Registered Businesses

	BH	DG	GA	GS	UG	UH	Dec. 2005
Total	31	28	29	11	29	34	162
Number of Co-ops /	31	18	26	10	19	34	138

Registered Businesses							
Number of Herder Groups	0	10	3	1	10	0	24

Since the beginning of Gobi Phase II in January 2004, Mercy Corps has assisted 75 herder groups to become formal legal entities.

Cooperative young leadership training

During the reporting period, the program finalized the training curriculum and materials for the young cooperative leaders training. Initial training has been implemented in all six Gobi aimags. A total of 89 young cooperative leaders (56 men; 33 women) participated in the training. Of the participants, 67 were under thirty-five years of age, and in terms of education, 21 had completed their university education, 9 had completed vocational training, and the remaining 59 had not completed their secondary education. The topics covered in the training included: how to establish a cooperative (registration and legal compliance); cooperative management skills, leadership skills, financial management and record keeping and how to market your produce. At the end of the training, each participant developed his/her own action plan to tackle the challenges faced by their respective cooperatives. The action plans were based on their learning during the training and related to their own experience in their cooperative. During Year Three, the UB-based cooperative development program officer will provide mentoring and support to each of these young leaders as they work with their GI supported cooperative to implement their action plan.

Activity Three: Agriculture Training and Technical Assistance

During the third quarter, a total of 52 training and technical assistance (TA) interventions were organized and implemented, with the strongest focus on: cooperative development and helping the existing registered cooperatives build their institutional capacity in relation to day to day management, financial control and joint decision making, basic veterinary education for herders and business plan development for the herder clients that will work with the program in 2006. Table 6 provides a summary of all training and TA provided to herder clients during the quarter. As in Year One, the majority of these training and TA interventions were planned and implemented by the local aimag consultants and the aimag-based program officers.

Table 6: Summary of Training and Technical Assistance Provided in the fourth quarter 2005

General classification of TA	Interventions Provided Oct - Dec 05	Provided by aimag consultant	Provided by GI Program Officer	Provided by UB consultant
Financial management - accounting, record keeping and banking	2		1	1
Vegetable/crop production - soil preparation, seed certification, planting methods, diseases and pests, harvesting, storage and processing	3	3		
Cooperative development - management, structure, leadership, operations, marketing, record keeping and reporting, and regulatory compliance	21	11	9	1
Bakery/food processing - equipment identification, sourcing and maintenance, new product development	1	1		
Business Plan - developing a Business Plan: selecting right business, marketing, finance, production, activity plans	6	4	2	
Laboratory - milk testing methods, location of lab, maintaining lab equipment	1			1
Land - law, government policy, land ownership, land use for tourism, pasture, how to solve problems	3	3		

Management - cooperative management skills for young leaders, financial management, accounting, marketing products	6		1	5
Livestock production - livestock intensification under Gobi conditions, design of livestock barns, feeding supplements, grazing rotations for fenced pasture.	3	2		1
Veterinary - disease diagnosis, vet first aid, infectious disease prevention, equipment identification, sourcing and maintenance	6	4		2
TOTAL	52	14	3	9

During 2005, a total of 332 training and TA interventions were provided to the herder clients. Table 7 provides a summary of all training and TA provided to the GI herder clients in CY2005.

Table 7: Summary of All Training and Technical Assistance Provided in 2005

No.	Summary	Total number of trainings/consultancies provided in CY2005	Provided by UB consultant	Provided by Aimag consultant	Provided by GI Program Officer
1.	Financial management - accounting, record keeping and banking	36	2	22	12
2.	Tourism operations - guest services, client / customer satisfaction	4	4		
3.	Sales and marketing - market identification, pricing, product packaging and promotion	12	7	2	3
4.	General management - budgeting, human resource management, legal and tax issues	7	4	3	
5.	Animal breeding - selection, breed characteristics, herd/flock record keeping, artificial insemination technology	6	2	4	
6.	Dairy milk processing - types of milk products, processing technology, use and maintenance of equipment	26	7	18	1
7.	Vegetable/crop production - soil preparation, seed certification, planting methods, diseases and pests, harvesting, storage and processing	61	2	59	
8.	Felt making technology	17	1	16	
9.	Fodder/forage production - soil preparation, selection of suitable crops, diseases and pests, harvesting, processing, storage (hay/silage)	7	1	6	
10.	Cooperative development - management, structure, leadership, operations, marketing, record keeping and reporting, and compliance	83	10	45	28
11.	Business start-up training - basic financial management, market research, sales methods, staff management, legal and tax issues	7	1	4	2
12.	Veterinary training - basic animal health and parasite control, zoonotic diseases, animal food hygiene and health	4	2	2	0
13.	Specialized technical assistance - compressed fuel blocks, well repair, fuel operations, etc	9	4	5	
14.	Bakery/food processing - equipment identification, sourcing and maintenance, new product development	10	3	7	
15.	"Buryat" boot/felt boot making - design, use of new materials, stitching, decoration	2	1	1	
16.	Semi-settled livestock production - livestock intensification under Gobi conditions, design of livestock barns, supplemental feeding, grazing	4	3	1	

	rotations for fenced pasture.				
17	Meat processing technology - meat hygiene, safe slaughter of animals, cuts of meat	2	1		1
18.	Business plan development	26	4	5	17
19.	Camel wool sorting, combing, spinning and knitting	2	2		
20.	Chicken and pig farm - animal husbandry, animal nutrition, appropriate housing for animals	5	3	2	
21.	Wooden production technology	1	1		
22.	Pasture utilization management	1			1
	TOTAL	332	65	202	65

During the quarter there were no requests for 'refresher courses'. As described in the Annual Work Plan, these courses are offered by the program if there is a strong client demand for the training, and provided that the participants are willing to cover the full costs of the course.

Activity Four: Acquiring Critical Inputs

The GI Program Officers continue to provide the herder clients with assistance and advice to identify and purchase the equipment that is appropriate for their businesses. During the quarter, seven GI clients purchased machinery as part of their business plans. During 2005, a total of 108 herder clients purchased the equipment identified in their business plans with assistance from the GI Program Officers (GA - 22 clients, UG - 29 clients, DG - 9 clients, GS - 16 clients, UH - 9 clients, BH - 23 clients). The purchased assets include; elite breeding animals (sheep, goats and dairy cattle), soil cultivation equipment, small tractors, seeds and fertilizers, veterinary medicines and equipment, dairy milk processing equipment (including milk separators and ice cream machines), meat processing equipment, and construction materials for animal shelters and greenhouses. The total value of the equipment purchased was approximately MNT 145 million. Most of these equipment purchases were financed through loans obtained by the respective herder businesses.

As part of the program's technical assistance, the aimag-based program officers have provided loan facilitation assistance to those herder groups/cooperatives with approved business plans. In this fourth quarter, a total of three herder businesses and six non-herder business received loans totaling MNT 50,770,000 (\$42,300), bringing the year-to-date total of loan recipients to 150 businesses and MNT 444,959,000 (\$370,800). Mercy Corps provided a total of MNT 31,371,000 (\$26,100) as additional cash collateral during the quarter through the USDA-funded loan guarantee program component; the year-to-date total is MNT 321,694,100 (\$268,000).

Since the beginning of Gobi II, Mercy Corps has assisted 200 businesses to obtain commercial financing of MNT 569,059,000, of which MNT 424,584,100 (\$353,800) has been guaranteed through the USDA-funded 'Rural Agribusiness Support Program'.

Of the loans guaranteed by Mercy Corps during 2005, there has been one default. The client was the "Aviat Aman Bulag" cooperative in Uvurhangai aimag. GI met with the Governor of Uvurhangai, Mr. B. Erdenebilegt, in early 2005 to agree upon collaboration with respect to the business plan of "Aviat Aman Bulag" cooperative to cultivate fodder on 100 hectares of land. The aimag government had developed a four-year plan to establish fodder production on 1,000 hectares, with the goal of having more fodder available for herders within the aimag and for the state reserve. A Memorandum of Understanding was developed and signed between the three parties (GI, cooperative and aimag government) outlining the roles and responsibilities of each in ensuring the success of this initial undertaking. The initial efforts of the cooperative with assistance from GI resulted in the successful planting and cultivation of an oat crop on the 100 hectares. However, in early September there was an unexpected heavy snow fall and the standing oat crop was partially destroyed. This resulted in the cooperative being unable to harvest the entire oat crop, and sales generated were well below what was in the business plan. The failure to harvest the crop and sell the oats meant that the cooperative was unable to meet its loan repayments.

With the development of new business plans, GI program staff has started to identify the critical inputs that many of the herder clients will be seeking to purchase in 2006. A continued priority for GI has been the identification of potential vegetable and forage crop seed suppliers, especially those offering quality potato seeds and fodder crop seeds (oats, alfalfa, barley and perennial grasses). A number of contacts have been made with potential seed suppliers based in Ulaanbaatar and Erdenet; once the business plans are complete and the exact quantities of seeds required are known, the UB-based agriculture officer will facilitate the linkage between the herder clients and the seed suppliers. Other critical input suppliers that the program staff has contacted include vendors of small tractors, irrigation systems, and milk processing equipment such as milk separators and small scale pasteurizers.

Aimag State Veterinary Laboratories

During this reporting period, the training of twelve laboratory staff, three from each of the four aimag veterinary laboratories, was completed. The training occurred over a three-week period from October 17 through November 4, 2005 in Ulaanbaatar. The curriculum was fully taught as planned and covered veterinary infectious disease diagnostic assays, food safety and hygiene analysis, and veterinary epidemiology. The State Central Veterinary Laboratory (SCVL) and Mongolian Veterinary Medical Association (MVMA) conducted all trainings except the epidemiology component, which was a separate three-day training conducted by an independent consultant. A copy of her report in partial fulfillment of the consultancy requirements is attached as Appendix 2. The trainings were well received and appreciated by all participants, and enhanced the technical knowledge of laboratory staff in accurately diagnosing infectious diseases of both animal and public health significance. The veterinary epidemiology training was novel, laying the foundation for further much needed work in this area.

The equipment provisioning component of the three-part Aimag State Veterinary Laboratory project (renovation, training, equipment provision) has been delayed due to difficulties encountered in finding appropriate items meeting all technical and source and origin requirements. All equipment has now been identified and ordered. Whereas equipment was to arrive for installation this quarter, less than 10% of the equipment has arrived to date. The remainder of the laboratory equipment will arrive in February and March 2006. Once the equipment is in country it will be transported to the labs and installed using trained personnel from the SCVL. An official dedication of the laboratories will be scheduled upon installation of equipment and finalization of the project, anticipated by the end of the first quarter of 2006.

Activity Five: Long-Term Technical Assistance

GI has been working to identify long-term assistance needs for the thirty-five non-herder clients who finalized their business plans. Of these thirty-five businesses, twenty-two have received loans for investment in equipment and working capital. In addition to support for business plan development, GI has provided the selected businesses with targeted training and technical assistance during the quarter, as follows:

Table 8: Long-Term technical assistance provided to Non-Herder Businesses during the fourth quarter

<i>Aimag</i>	<i>Business name</i>	<i>Technical Assistance field(s)</i>	<i>Consultants</i>		<i>Cost share (MNT and % of consultant fee)</i>
			UB-based	Aimag-based	
DG	Zambagin Tal LLC	Cooking and bar tending (3-week training)	Mongolian Culinary Federation, Training Center in UB		No cost-share
	Zambagin Tal LLC	Hospitality Management (Hotel and Restaurant - Service management)	D. Gansukh		20,000 - 26%
	Itsel Zutgel Coop	Cooperative Management		Altantogos	6,000 - 40%
GA	Buural Esun Khusel LLC	Chicken Farm Management - Feeding and Tending		S.Jigmed	10,000 - 50%

	Buren Chandmana LLC	Accounting and bookkeeping		Enkhjargal	5,000 - 33%
BH	Nasan Khishig Coop	Bread/Pastry Technology	Urantsetseg		30,000 - 29%
GS	Lucky Dent LLC	Hospital Management/ Administration	Dolgor		30,000 - 29%
GS	Ergel Bogdin Zoo LLC	Rye bread technology	Urantsetseg		30,000 - 29%
DG	Itgel Zutgel Coop	Accounting and bookkeeping		Myadagmaa	6,000 - 40%
UH	TU-BA-SE LLC	Legal Aspects of Business		Tugsjargal	10,000 - 33%
UG	Galbin Ulaan Partnership	Wool processing	Munkhsoyol	Otgonchimeg	20,000 - 19%
GS	Goviin Tuya Partnership	Sewing and tailor design and modern pattern	M. Batzorig		45,000 - 29%
UH	Tsars Khangai LLC Itgel LLC	Marketing - Product Development and Promotion Strategy	B. Bilegsaikhan		60,000 - 39%
UG	Galbin Ulaan Partnership	Marketing - Product Branding	O. Tsolmonkhuu		10,500 - 18%

Activity Six: Short-Term Technical Assistance

During the quarter, five requests were received from non-herder businesses for specific short-term technical assistance. The businesses receiving the TA contributed towards the cost of the activity.

Table 9: Short-Term technical assistance provided to Non-Herder Businesses

Aimag	Client name(s)	Technical Assistance field(s)	Consultants		MNT and % consultant fee cost share
			UB-based	Aimag-based	
DG	Temuujin Hotel LLC	Need Assessment - Management Improvement		Denise Wilkins (PCV)	No fee paid as TA provided by GI staff
UH	Ikh Mongol Ger Camp Tsagaan Zala Summer Retreat.	BP Development and assessment		Tegshbayar (GI program officer)	No fee paid as TA provided by GI staff
UH	Anar Tourist Camp	Food Service Technology	Gankhuyag		30,000 - 39%
GA	Buyan Undral Coop	Food Service Technology		U. Darkhijav	15,000 - 50%
UG	Khanbogd soum Residents	Business Sartup - basic financial management, market research, sales methods, staff management, legal and tax issues		Enkhtuya (certification by Tsolmonkhuu)	45,000 - 100%

Activity Seven: Local Capacity Building for Training and Technical Assistance

The program continues to concentrate efforts on increasing the technical knowledge and improving the training delivery skills of the aimag-based consultants and program staff who provide training and technical assistance to program clients.

In November, 15 aimag-based agricultural consultants and 6 aimag-based agricultural officers attended a four-day training in Ulaanbaatar. The training included the following topics; soil conditions in the Gobi region, how to improve the soil fertility and decrease the salinity of the soil, and identifying and selecting appropriate vegetable and fodder crop seeds (certified seeds) for the Gobi region. The training also included a session on improving and developing training skills and how to plan and conduct training events and prepare materials. In December, in collaboration with the Mongolian/Japanese supported FAO Special Program for Food Security Project "Increasing Dairy Production and Supply in Mongolia", training on improving the quality of dairy production and milk processing was organized for 16 aimag-based local consultants who provide dairy related technical assistance to GI herder clients. The training was held in Ulaanbaatar and provided technical and practical training using modern equipment recently installed in the FAO supported 'Dairy Training Centre'.

During the quarter, the need to provide further training and capacity building opportunities for those aimag-based consultants who are specialists in financial management and record keeping was identified. The UB-based program officers have been working with UB-based financial consultants and certified accountants to develop a training program and a comprehensive financial record keeping book. The training and distribution of the book will be implemented during the first quarter of 2006.

During the quarter, no aimag-based consultants were involved in the local consultant 'certification' process. This was due to the fact that the aimag-based consultants most frequently hired (vegetable and fodder crop, dairy processing and cooperative development) have already been certified. With the remaining 'technical specific' aimag-based consultants less frequently hired, the program has focused on other priorities. It has also been a challenge to find suitable Ulaanbaatar-based consultants who are available to conduct the on-site assessment of these remaining consultants. To date this year, a total of 28 aimag-based consultants have been certified by the program. The consultants that received an 'excellent', 'good' or 'very good' rating will continue to be regularly hired to provide training and technical assistance to program clients. The consultants that received an 'OK' rating will receive additional training through the GI program to improve their skills and knowledge, after which they will be re-evaluated. There are still a number of aimag-based consultants that are yet to be certified by the program. As a result, the 'certification' process will continue to be implemented in the aimags until all local aimag-based technical providers have been assessed.

Activity Eight: Market Development

Having successfully implemented the Trade Fairs in all Gobi aimags during the third quarter of the year, the Bayanhongor aimag government, in cooperation with Gobi Initiative, organized the "Bayanhongor Trade Fair" in Ulaanbaatar on the 22nd and 23rd of October. A total of 150 businesses from all 20 soums in Bayanhongor participated in the event, generating total sales of MNT 32.5 million (\$27,000). Dairy products were in highest demand and were all sold within the first day. Jargalant Sumber Hairhan cooperative, a GI client, sold MNT 2.5 million (\$2,000) of fresh dairy products at the event. On both nights, a concert was organized at the UB Palace. "Melodies of Bayanhongor", featuring artists and singers from Bayanhongor, was sold out on both nights. The costs for the event were covered by the aimag government (60%), the BH Advocacy Group based in Ulaanbaatar (28%) and Gobi Initiative (12%). This was the final trade fair of the year and proved to be a great success.

The market relationship with Ivanhoe and the sale of vegetables on a monthly basis has continued successfully this quarter with GI-supported cooperatives in Dundgovi, Uvurhangai and Umnugovi. During the quarter a total of 6.5 tons of vegetables were delivered to the Oyu Tolgoi mine site. In total during the year, 23.5 tons of vegetables were sold at a value of MNT 12.5 million. The vegetables included potatoes, onions, cabbage, turnip, tomatoes, cucumbers, peppers, watermelon and carrots. Also during the quarter, GI and Ivanhoe Mines continued the process of supporting the establishment of an independent commercial bus service to transport Ivanhoe employees between Dalanzadgad and the Oyu Tolgoi mine site. Ivanhoe Mines and the director of the business that will run the bus service are negotiating the passenger fare. Ivanhoe will contract a minimum number of seats for each trip for an extended period of time, and GI will provide business planning support, any required training/technical assistance, and a guarantee against a commercial ban for the purchase of a bus and for some working capital. A second

route is also being planned for Ulaanbaatar-Oyu Tolgoi. This is the first of several services that Ivanhoe is seeking from local area residents.

Peace Corps volunteer John Edgar, who is working in the Govi-Altai office, assisted the "Tsagaan Temee" herder group from Sharga soum to sell camel wool yarn, gloves, socks and children's boots produced by members of the group at the Bank Grassroots store. In total the group has sold over 60 items for MNT 110,000.

MC/Mongolia met with the US-based designers/importers, "Stewart Brown" to discuss opportunities for linking herders who produce top quality cashmere with the knitting facility contracted in UB by "Stewart Brown". These discussions are ongoing and the UB-based program staff will be meeting with various domestic spinning facilities in the spring of CY2006. In addition, the designers met with a local GI client, Ms. Amrajargal from Harhorin soum in Uvurhangai, who produces high quality felt products. The designers purchased some of her products to review and test for possible sale in the US.

Activity Nine: Local Capacity for Advocacy

During this reporting period, no significant activities were implemented towards building local capacity for advocacy.

Activity Ten: Local Government Support for Business

During the fourth quarter, the program focused on a number of local government training activities. The workshops were very well attended and the participants have requested further training opportunities.

A management training event for government employees was conducted on October 18th and 19th in Bayanhongor aimag center. Twenty-three government employees, including soum governors and department chiefs from twenty soums, participated in the training. The training provided a clear vision on what government services are and how best to provide these services, as well as how local government employees can support local business development.

In October, the Dundgovi office organized a business workshop for twenty-three aimag tax inspectors. The two-day training was designed to improve the participants' overall understanding of the challenges of running a business. The training focused on the basics of business; generating a business idea, registering a business, basic marketing skills, and several "how to's" - conducting market research and writing business plans. The workshop included practical exercises on conducting business environment analysis, discussing how to communicate with business owners, and the most effective ways to support businesses. The training also tackled the issue of getting tax inspectors to understand their role as a source of information and advice to assist business owners in completing their tax returns correctly and in complying with tax laws.

In order to encourage the government employees of Gobi-Sumber and Gobi-Altai to support local entrepreneurs, a training session on business plan development was organized in each aimag. In addition, the "Government Employee's Support NGO" implemented a training on time management and team building for Gobi-Sumber government staff.

In November 2005, a series of two-day training workshops on government procurement policies and procedures were conducted for aimag government officers and business operators in Govi-Sumber, Umnugovi and Bayanhongor. A total of 64 government employees attended from the following departments: tender committee, department heads, court and tax officials, soum governors and the police department. The training introduced common issues on the basic principles of government procurement, the legal environment and competitive tender bidding for government purchases. The training workshops were implemented by a UB-based organization, the "Procurement Development Center". The organization was initially established by the Ministry of Finance to assist aimag governments to procure goods and services in a transparent and competitive manner.

In Tugrug soum in Uvurhangai and Saihan Ovoo soum in Dundgovi, two training sessions were held on current land laws and the government policy on land ownership. A total of 60 people participated in the training, including soum government officials, local businesses, and Gobi Initiative clients. During the course of the training it became evident that the soum government officials do not have sufficient technical knowledge regarding land laws and the government policy on land ownership. The lack of technical capacity of officials at the soum level has resulted in a number of land ownership disputes among the local community. The training provided a wealth of information and knowledge to the soum and bagh governors on the existing laws and policy, and advice on how to mediate land ownership disputes among herders. Much of the herder business diversification that is currently occurring across the Gobi region requires that herders be able to obtain legal land ownership or land use rights.

INTERMEDIATE RESULT 1.3-2 Increase in Availability, Access to and Use of Information

Activity One: Business Information

CRSP Forage Forecasting.

With the onset of winter and the end of the growing season, the Gobi Forage team has completed the field work and the quarter has been spent primarily on completing the analysis of the field data and inputting the data into the PHYGROW computer model. This has involved; (a) continued verification of the forage forecasting model and the mapping products, (b) fine tuning of the computer model with adjustments based on the verification data, (c) efforts to improve livestock stocking rate information, (d) assessments of the accuracy of the satellite rainfall data, and (e) development of the outreach materials for dissemination of maps and other outputs. One of the problems encountered has been validating the rainfall recorded by the NOAA satellite system. In order to validate this data, the project gathered actual recorded on-the-ground rainfall data from the Institute of Meteorology and Hydrology, which was then forwarded to the Texas A&M scientists for validation and cross referencing with the satellite data. GI has also installed ten rain gauges and thermometers at herder sites; the herders will collect the actual weather and precipitation data for cross-referencing with the satellite weather data. During the quarter, the project officers have continued to translate the English-language forage forecasting web site into Mongolian.

During the third quarter, a video technician from the US spent three weeks filming and preparing a fifteen minute video on the Gobi Forage project. The video was completed during the fourth quarter and will be available in both the Mongolian and English languages in early 2006. The video will be used as a training tool for the Gobi Forage project officers as they begin to develop and disseminate the Gobi Forage products. The video will explain the forage forecasting technology and the articles that will be produced for dissemination to the herders and stakeholders in the aimags. It will expand on the methods and technology that potentially will be used for the dissemination of the forage forecast information; this will include a short section on the concept of 'member based organizations' such as herder associations and how an association could provide a variety of services such as forage forecasting information, supplemental winter feedstuffs, assistance with marketing products, veterinary care, machinery, and other miscellaneous services.

Production and Dissemination of RBN Mongolian Magazine

Herders continued receiving the monthly Rural Business News magazine during the fourth quarter. With an average circulation of 7,500 per month, the magazine provided rural business operators (herding and non-herding), as well as government and non-government employees, with business related information and tips. The twenty-two page Rural Business News magazine was entirely based on reader needs and demands with content that is educational, practical and demand-driven.

RBN staff, with assistance from experienced Mercy Corps Ulaanbaatar and aimag-based staff, ensured that the content remained consistent with rural business development issues. Stories remain educational, practical and relevant, with stimulating local success stories, knowledge-adding business and herding tips, and experience-sharing best practices. Features such as "Lead Story", "Business Corner", "Herders' Tip", "Aimag Stories", "Trip Diary", "Interview", and "Q&A" continued to appear in RBN pages. These were well-researched and written in various journalistic styles.

Vegetable preservation, post-harvesting tips, establishing handicraft businesses, managing human resources, selling and storing of products, local tourism, dairy food safety, baking tips, marketing methods, diversification, rangeland management, and planning were all included as topics in the above-mentioned stories during the quarter.

"Lead Topics" provided an overall review of the rural business environment, including, 'How to promote member participation in cooperative daily life', "Protecting herders rights" and "How to market agricultural products". Aimag stories continued to present best practices and success stories from rural businesses, as well as ways to enhance small business operations and generate new business ideas. In total, 18 stories featuring rural businesses appeared in RBN in the fourth quarter. The 'Technical Insert' pages, which focused on a specific topic every month, provided information on cooperative development and management and preparing raw materials (skin, hide, intestines, milk, meat, etc.) consistently for later processing. The last issue featured how-to information on social security and insurance.

Cooperation with rural media continued, and RBN stories were printed in local newspapers - 'Uvurhangai Life' and 'Bayanhongor News'. RBN negotiated with local papers in Dundgovi (Gobi Life) and Umnugovi (Mongol Gobi) who agreed that they would publish RBN stories as a newspaper inside of their newspaper. Bayanhongor News published two stories, one on patchwork and the second on selected goat breeding business tips. Uvurhangai newspaper also published a story about a tourism business run by herder groups. Some aimags, including Umnugovi and Govi-Sumber, do not have regular newspapers, so this makes this type of work difficult. Some new papers have emerged, but with limited circulation and editions. Nonetheless, Pact is looking forward to cooperation with these papers.

In order to keep the business information dissemination effective and useful for future periods, and to stay informed and make changes regarding demand, Pact, with input from an international consultant Tracey Naughton, developed a new monitoring and evaluation system which will be piloted during the quarter. The final results from the pilot will be released in early 2006.

RBN also received feedback from various sources, including aimag-based Market Watchers, Gobi Initiative Offices, stringers, and direct communication. Feedback received during the quarter included the following:

Dorjbadam of Jargalant Sumber cooperative, Bayanhongor aimag, said that he first envisioned the formation of a cooperative after reading previous RBN issues. While establishing the co-op, he began utilizing RBN resources along with GI training and technical assistance. He managed to increase the profits of nine herder family members, doubling the income of each member.

Bolormaa, of Yosunbulag soumin Gobi-Altai, says she began using the vegetable irrigation tips, which helped her save precious Gobi water with timely and effective methods of irrigation.

A herder from Gobi-Sumber, Gungaa, stated that he learned how to process sheep intestines and skin and thanked RBN for reminding him of this formerly under-utilized opportunity to increase his income.

D. Lhagvasuren of Govi-Sumber's Shivee Gobi soum piloted the making of building blocks and bricks according to RBN tips and said the experiment was very viable.

Ganbat, of Umnugobi aimag, Hanhongor soum, started storing vegetables in an underground cellar that he built under his ger, following a story published in RBN. Because of this new storage method, he hopes that his family will use fresh vegetables throughout the year and sell vegetables during the winter and spring months.

Tsagaan Haalga herder group chairman D.Orosoo, of Govi-Altai, discovered many new ideas from the Regional pages of RBN, saying that he suddenly realized there are many marketing possibilities, even in the soums. The herder group is now looking at product diversification opportunities, focusing on ideas they acquired from RBN, e.g. felt making, earthenware production, chicken and pig farming, buckthorn planting and farming.

RBN also conducted subscription promotions in the six Gobi aimags via local Market Watchers, Herder Associations and postal branches. Herder NGOs, GI Aimag Offices and Market Watchers carried out local promotion along with cross-promotion by RBN media outlets.

For the year, RBN had 29,532 readers per month on average subscription numbers for CY2005.

Production and Broadcast of RBN Weekly Radio Programming

As in previous quarters, RBN aired an average of 900 minutes of radio programs each month for the fourth quarter. Pact estimates that RBN radio programs reach at least 103,105 listeners on a regular basis nationally. Programs were produced to suit listener/client needs and developed and produced in an interesting, educational and practical manner. A combination of sound bites, live interviews and natural sounds ensured more interest for a broader audience. Programs included 'Market Watch', 'Weather Watch', 'Learning Agribusiness', 'Business Mirror', and 'Feature Success Stories', all which gave improved and useful information and in-depth tips. The Mongol Radio survey that was conducted in October (covering third quarter programs) states that Rural Business News was ranked the 9th most listened to program after news, music and art programs.

Broadcast schedules remained the same, and RBN is looking forward to increased programming in CY2006. The radio continues to be one of the most effective media to reach the rural population in the Gobi region and nationally. Excerpts of listener feedback include:

Focus group members in Dundgovi aimag all agreed that the Market Watch segment of Rural Business News Radio is the most listened-to program with the greatest impact.

"The information we receive from Rural Business News radio is good. We always stick our ears to the radio to find out the market prices and other business information so that we will be aware of prices to negotiate," said S.Surenhorloo of Erdenetsogt soum, and J.Lhagvasuren of Bayan-Ovoo soum (Bayanhongor).

I recently heard a radio program about brick making. It stimulated new ideas; and I started producing sample bricks with locally available clay. As a result, I am planning for a small brickyard business (S. Dorjgotov of Umnugovi).

A citizen of Dundgovi aimag, Saintsagaan soum, said that she likes the radio programs, especially the series on resource management, as she runs a small business that always necessitates proper handling of human resource issues.

Herder from the Future Radio Drama (25 programs)

In the fourth quarter, RBN began broadcasting the last 26 episodes of the famous "Herder from the Future" (HFF) radio drama. Effective 12 November 2005, the drama episodes started reaching listeners on Saturdays (7.45 am) and Sundays (7.25 pm), with each episode running for 20 minutes. The program was also carried on the second channel of Mongolian National Radio aired only in aimag centers via FM on Sundays (11.00 am).

As the year ended, Pact began planning an original documentary series that will be a complete departure from the HFF format.

Production and Dissemination of Market Watch

'Market Watch' continued to provide demand-driven price information. RBN, using its nationwide 'Market Watch' network, gathered highly valued commodity price information and disseminated it to GI clients and other herding and non-herding businesses nationwide (21 aimags).

The RBN-509 SMS service continued operating during the period, with an average of 800 hits per month. The 'Market Watch' radio program included different commodity prices. Pact also started providing information related to local supply and demand rather than single price information, so that herders could make more accurate sales decisions.

RBN magazine continued producing the 'Market Watch' insert, highlighting cashmere and skins/hides, meat, and other raw material prices. The insert also included analyses and details on factors influencing price fluctuations and forecasting. The insert, with market reports, also provided useful tips on calculating marketing costs and understanding MIS information.

The Market Watch service attracted the attention of other donor projects and programs. Pact is exchanging opinions with the Development of Agricultural Service Project (EU) and Wholesale Network (EU) projects on specialist Market Watch services within their target aimags. A number of presentations were done for local extension workers and project staff.

'Market Watch' broadcast a twice-monthly TV program on Mongol National TV in October. RBN journalists anchored the program during that period. The October program had inserts about the recent Market events and price-related information. In November, Mongol TV began its transition to become a public broadcaster, and as a result, applied a change in the structure of the programs. This resulted in the temporary suspension of the 'Business News' program, of which Market Watch is a segment. Discussions have been held with the current director of MNTV and the program will resume as part of a new stand-alone RBN program in 2006.

Overall, 'Market Watch' continued providing herders and non-herding business operators with information enabling them to make decisions about which markets to access and at which prices to sell their products, thus continuing to meet the objective of eliminating regional price differentials.

RBN Website

Pact has continued to update the RBN website (www.rbn.mn). The website pulls together all rural business news reported elsewhere as part of RBN services and products, targeting primarily rural business people who have access to the Internet. Some online feedback reached Pact this quarter showing that there is a growing peri-urban/rural tendency to use the Internet in the aimag centers. An Internet user from Umnugovi aimag, a local company owner engaged in production, farming, and herding, sent an email via the website and pointed out the importance of "winter rangeland management" tips and expressed that he has started pasture planning for his business.

Production of Video Training Materials

Pact completed the production of a business planning and a vegetable cultivation training video. Video training materials will be distributed in VCD format to aimag centers, local TV stations, GI offices, libraries, other projects, learning centers, and herders and herder cooperatives.

The business planning video covers the importance of business planning, and why planning is important in order to encourage herders to run their businesses more systematically. The video provides overall business planning basics and also provides tips on where people can find planning related information. The vegetable video highlights the different aspects of cultivating vegetables through the year and provides basic tips for the growing season, harvesting and storage of vegetables in winter.

Production and Broadcast of RBN TV Programming

RBN produced six prime-time television programs during the quarter. Programs were produced and aired in collaboration with Mongol TV. The goal of the programs remained the same; sharing the best practices of successful rural businesses throughout the country so as to stimulate new ideas for diversification. Business operators and cooperatives that were highlighted included Gobi clients, from Govi-Altai (Gune Bilag veterinary service business and Arvin Dult cooperative), Govi-Sumber (Buyan cooperative and Goviin Tuya partnership) and Uvurhangai (Itgel cooperative and Tsars Hangai LLC) aimags. RBN also provided opportunities for them to advertise their products nationwide and to share their experience with others.

The main messages of the programs included different messages specific to each business. For example, the first program focusing on a veterinary service business highlighted ways for business operators to fund business activities, and the use of modern technology and equipment. The second program, highlighting a Govi-Altai aimag based coal powder (briquette) maker, emphasized the company's practice of developing the business based on customer demand and not on what can merely be easily produced. The TV programs produced from Govi-Sumber were on sharing best practices and management tips, such as a rural business (Buyan cooperative) competing with a government-run business. The second Govi-Sumber program focused on a new mobile business that generates income by providing isolated herders with tailoring services. The December programs shared the best practices of Itgel bakery, which has succeeded in

business through smart solutions to marketing and packaging of its products. The second program highlighted a local carpentry workshop in the soum center that sells goods through its own stores and other marketing channels.

In September, Pact began broadcasting a 26-episode TV drama series on Mongol TV. The new 26-part educational TV drama entitled "The Endless Labyrinth" tells the story of a family that loses all their animals and their subsequent efforts to develop and operate a small rural business and overcome different obstacles. Episodes 5-12 were broadcast during the fourth quarter. The key messages focused on business funding, stimulating new business ideas, marketing and diversification.

We estimate that RBN TV programs reach at least 352,680 viewers on a regular basis nationally (extrapolation of both Pact and MNTV data).

Activity Two: Local Capacity for Information Dissemination and Communication

During this reporting period, Pact successfully negotiated via the Mongolian Information Network NGO, to organize a series of radio call-in shows in the Gobi aimags. The shows aim to bring local authorities together with community and business operators around the same table to share opinions on business development. Preliminary preparations for the show took place in the aimags with local NGO representatives. With Pact's technical assistance, the NGO will organize radio call-in shows on topics such as the implementation of land legislation, land rights and access to land, local government procurement and tendering processes, transparency, aimag budget development/expenditure, civic participation and SME funding etc.

The radio call-in show is expected to be aired over local radio in early CY2006. Pact hopes that local media will thereafter broadcast similar shows on a quarterly basis on their own initiative, with technical input from Pact. Discussions around this are currently underway. The achievements and findings will be reported to USAID in CY2006.

COLLABORATION WITH GOVERNMENT OF MONGOLIA AND OTHER PROJECTS

In Ulaanbaatar, Mercy Corps staff continues to meet on a periodic basis with other implementing agencies and with consultants engaged to design and/or evaluate donor-funded rural economic development programs. Meetings were held with World Bank staff working on the "Sustainable Livelihoods Project", during which the opportunity to expand the Gobi Forage project into Tuv aimag, with funding from the World Bank, was discussed and finalized. The proposal for Tuv aimag was submitted to the "Sustainable Livelihoods Project" management office and the program is waiting to receive a reply and negotiate the terms and conditions of the expansion plan. The Gobi Forage expansion will initially cover two soums and provide forage forecast information to the key stakeholders. Key information-sharing meetings were also held with the "Privatization of Veterinary Services" project of GTZ to discuss opportunities for cooperation and collaboration in the veterinary sector.

GI and RBN program officers participated in an EU-Tacis, DAS (Developing Agricultural Services) workshop on media outlets and information dissemination mechanisms to agricultural extension workers from different aimags. The workshop focused on current information dissemination mechanisms and opportunities for cooperation among the donor funded projects in-country.

The Dundgovi office, in collaboration with the Dundgovi Youth' NGO, has continued co-implementation of a small business development project for young entrepreneurs, funded by private donors of Mercy Corps. Ten young entrepreneurs are currently implementing various "start-up" business plans. Total sales for these ten small businesses for the year are MNT 20 million. Of the ten young entrepreneurs that have established new businesses, two businesses have established themselves as successful operations and will be mainstreamed into the Gobi Initiative program to become long term non-herder business clients. These include a café/restaurant located in the aimag center, and a hairdressing business located in Deren soum. During the fourth quarter, the GI program officers in Uvurhangai and Bayanhongor have identified suitable counterpart organizations with which to work, as the program plans to expand into these aimags.

PROGRAM/FINANCIAL MANAGEMENT

There were no key staffing changes during the fourth quarter.

Spending through December 31, 2005 has not yet been completely finalized, but preliminary figures indicate cumulative expenses of \$ 3,349,875. This amount is composed of the following:

UB Project Management	\$	814,643
UB Program Delivery		638,709
Aimag Program Delivery		799,544
PACT/RBN		753,854
Indirect Cost		343,125

TOTAL	\$	3,349,875

The reallocation of Program Delivery expenses into "target group" results in the following:

UB Project Management	\$	814,643
Herder Businesses		801,766
Non-Herder Businesses		403,082
Local Government/Other (market events, etc)		233,405
PACT/RBN		753,854
Indirect Cost		343,125

TOTAL	\$	3,349,875

Gobi Initiative was involved in the annual USAID Portfolio Review. Decisions reached during that meeting were summarized in a memo prepared by the CTO, and circulated to all parties.

At this point in time, Mercy Corps and Pact have no recommendations for any material changes to the GI Phase II program.

This concludes the Year Two Fourth Quarter Report.

Attachments to this Report are:

Appendix 1: Details of Herder Client Sales during CY2005

Appendix 2: Veterinary Epidemiology Training Report - December 2005

DETAILS OF HERDER CLIENT SALES IN CY2005 - Annex 1

		Name	Aimag	Soum	Type	Activity	Revenue			
							Planned Sales CY2005	Actual Sales CY2005 (MNT)		
								Jan-Nov	December	Total Sales in CY2005
1	1	Aviat Aman Bulag	UH	Zuunbayan	C	veg/fodder production	24,000,000		2,900,000	2,900,000
2	2	Taatsiin huh arvai	UH	Baruunbayan	C	veg/fodder production	810,000	980,000		980,000
3	3	Badama Junnai	UH	Ulziit	C	veg/hay production	2,980,000	5,250,000		5,250,000
4	4	Ikh salhit	UH	Bayan undur	C	veg/hay production	10,080,000	8,500,000		8,500,000
5	5	Zuunbogdiin Uguuj	UH	Bogd	P	vegetable/fodder production	5,781,250	7,003,750		7,003,750
6	6	Mazar bayanhangai	UH	Tugrug	C	vegetable production	6,199,000	6,250,000		6,250,000
7	7	Barchin zalaa / Ikh zalaa	UH	Hairhandulaan	C	vegetable production	5,425,000	1,770,000	1,050,000	2,820,000
8	8	Munkhgurvan Khairkhan	UH	Nariinteel	C	vegetable/fodder production	5,956,000	5,580,000		5,580,000
9	9	Ugalz Buman Sureg	UH	Tugrug	C	vegetable/fodder production	2,172,200	2,195,000		2,195,000
10	10	Uguuj Teel	UH	Nariinteel	C	vegetable	1,950,400	2,567,000		2,567,000
11	11	Bayanzulegt	UH	Hujirt	C	dairy products	5,220,000	5,430,000		5,430,000
12	12	Uguuj Chandmana	UH	Tugrug	C	dairy products	6,975,000	5,988,900	333,000	6,321,900
13	13	Shimt sureg	UH	Arvaiheer	C	dairy products	8,320,000	2,700,000	965,600	3,665,600
14	14	Ideenii deed	UH	Uyanga	C	dairy products	1,800,000	6,278,000		6,278,000
15	15	Huduugiin amidral	UH	Bayangol	C	dairy products	2,940,000	2,477,000		2,477,000
16	16	Oodoo/ UUMAA	UH	Harhorin	LLC	dairy products	5,625,000	6,708,900	77,000	6,785,900
17	17	Munkhbulag-suu	UH	Harhorin	P	dairy products	3,480,000	2,829,500	675,000	3,504,500
18	18	Taliin uguuj	UH	Bogd	C	dairy products	7,336,000	6,650,000	650,000	7,300,000
19	19	Urhukh dulguun	UH	Zuunbayan ulaan	C	meat production	5,286,000	0	5,400,900	5,400,900
20	20	BVG	UH	Arvaiheer	P	meat production	11,745,850	0	7,424,300	7,424,300
21	21	Nayan dol/ Mungun zalaa	UH	Harhorin	C	meat/chicken farm	4,104,000	1,087,250	264,000	1,351,250
22	22	Munkh turuu	UH	Bogd	P	felt products	2,991,000	2,651,000	340,000	2,991,000
23	23	Danshig denj	UH	Usunzuil	C	felt products	2,100,000	2,710,000		2,710,000
24	24	Hiadiin Gobi	UH	Burd	C	felt products	1,070,000	1,142,000		1,142,000
25	25	Dulguun devshil	UH	Zuunbayan	C	felt products	4,000,000	5,145,000		5,145,000
26	26	Bayandulguun	UH	Usunzuil	C	tourism/ger camp	13,090,000	7,428,000	1,489,500	8,917,500
27	27	Hiimorit tahlilga	UH	Nariin teel	C	tourism/hotel, restaurant	6,425,000	6,569,950	1,220,000	7,789,950
28	28	Nutgiin buyan	UH	Usunzuil	P	tourism/restaurant	5,220,000	5,526,900	581,000	6,107,900
29	29	TMZA	UH	Tugrug	P	veterinary service	8,837,440	10,522,770	158,000	10,680,770
30	30	Uzmen ish	UH	Bogd	P	veterinary service	5,468,200	5,135,600	160,000	5,295,600
31	31	Jargalant gol / Tsog darit	UH	Burd	P	veterinary service	8,796,730	9,006,410		9,006,410
32	32	Usguh-Erdene	UH	Baruunbayan	C	trade/gas station	158,900,000	174,230,600	22,050,000	196,280,600
33	33	Ukhkaa hudag	UH	Bogd	P	P&S/electric appliance repair	6,530,000	5,896,700	791,000	6,687,700
34	34	Ov-TAN	UH		LLC	Dairy production	7,792,200	4,094,000	623,500	4,717,500
UH TOTAL							359,406,270	320,304,230	47,152,800	367,457,030
35	1	Badrah Shand	GS	Sumber	C	vegetable/hay production	4,770,000	3,761,500	580,000	4,341,500
36	2	Sumber Tsagaan Temeet	GS	Sumber	C	veg/hay production	4,000,000	3,696,000	760,000	4,456,000
37	3	Bor togoot / Baga sansar	GS	Sumber	C	vegetable production/hay	6,362,500	3,555,000	1,700,000	5,255,000
38	4	Devjikh /Tevshnii hajuu us	GS	Sumber	C	dairy products	10,140,000	5,750,000	1,200,000	6,950,000
39	5	Bishrelt sumber	GS	Sumber	C	dairy products	8,850,000	7,691,500	860,000	8,551,500
40	6	Doshin jirem	GS	Shiveegovi	P	dairy products	11,400,000	14,077,050	1,500,000	15,577,050
41	7	Ikh uul	GS	Bayantal	C	dairy products	17,915,500	19,415,000	2,150,000	21,565,000

42	8	Tsavchiriin ekh	GS	Tsagaandelger	C	meat production	11,690,000	9,728,000	800,000	10,528,000
43	9	Heentsii	GS	Sumber	HG	dairy production	21,364,000	15,430,500	2,500,000	17,930,500
44	10	Mandal Sansar	GS	Shiveegobi	C	tourism/summer camp/ hay prod	7,800,000	6,607,300	200,000	6,807,300
45	11	Hudulmuriin och	GS	Sumber	LLC	Veterinary service	16,043,000	3,906,000	2,600,000	6,506,000
GS TOTAL							120,335,000	93,617,850	14,850,000	108,467,850
46	1	Baidragiin Khishigt	BH	Bumbugur	C	vegetable production	3,540,000	3,600,000		3,600,000
47	2	Tsagaan undraga	BH	Baatsagaan	C	vegetable/fodder production	1,720,000	1,796,500		1,796,500
48	3	Modon Ovoonii Ekhlel	BH	Jinst	C	vegetable production	2,500,000	2,800,000		2,800,000
49	4	Tsenheriin Tsuurai	BH	Bayan-Undur	C	vegetable production	1,800,000	1,788,550		1,788,550
50	5	Altan teel	BH	Bayan-undur	C	vegetable/fodder production	1,220,000	1,290,150		1,290,150
51	6	Shuuj bayan orgil	BH	Bayanlig	C	vegetable production	3,100,000	3,460,000		3,460,000
52	7	Ulziit hyariin orgil	BH	Ulziit	C	vegetable production	4,250,000	3,550,000	800,000	4,350,000
53	8	Asgamba	BH	Bayan ovoo	C	vegetable production	7,350,000	7,545,000	525,000	8,070,000
54	9	Baruun nuur	BH	Buustagaan	C	vegetable production	1,950,000	1,711,000	610,000	2,321,000
55	10	Shirgiin hudag / Erdene teel	BH	Bayan-Undur	C	vegetable production	1,960,000	2,315,200		2,315,200
56	11	Har khud / Ikh maihan	BH	Bayan-Undur	C	vegetable/fodder production	3,480,000	2,854,450	750,000	3,604,450
57	12	Gurvan tsahir	BH	Buustagaan	C	vegetable production	4,216,000	5,185,000	636,000	5,821,000
58	13	Hoolt ehlek	BH	Bayan ovoo	C	vegetable production	2,875,000	2,808,000	182,000	2,990,000
59	14	Tovgoriin dalan	BH	Baatsagaan	C	vegetable production	3,165,000	2,921,400	420,000	3,341,400
60	15	Vant hairhan / Hoshoot hairhan	BH	Erdenetsogt	C	vegetable production	4,550,000	1,767,000	2,600,000	4,367,000
61	16	Suun bulag / Shargalzuut	BH	Bayanhongor	C	dairy products	2,875,000	2,450,000		2,450,000
62	17	Buyant hongor	BH	Erdenetsogt	C	dairy products	2,800,000	1,552,450	1,400,000	2,952,450
63	18	Jargalant-Sumber hairhan	BH	Erdenetsogt	C	dairy products	4,350,000	4,905,000	225,000	5,130,000
64	19	Mandal	BH	Jargalant	C	dairy products	2,890,000	3,302,600	723,000	4,025,600
65	20	Zuliin dul	BH	Galuut	C	dairy products	4,875,000	3,963,500	836,000	4,799,500
66	21	Sarlagiin shim	BH	Zag	C	dairy production	3,840,000	2,510,000	1,400,000	3,910,000
67	22	Jalanger ovoo/ Zalan	BH	Gurvan bulag	C	dairy products	2,478,000	2,454,500	245,500	2,700,000
68	23	Orogiin dolgio	BH	Bogd	C	felt production	2,220,000	2,320,000		2,320,000
69	24	Ikher gurvan bulag / Bayan	BH	Gurvan bulag	C	felt production	4,166,000	1,754,500	1,562,000	3,316,500
70	25	BNE	BH	Bayan undur	C	Veterinary service	6,933,000	7,050,950	1,000,000	8,050,950
71	26	Eruul urjihui	BH	Galuut	C	Veterinary service	5,950,000	5,963,000	97,000	6,060,000
72	27	Mongol ovoo	BH	Baatsagaan	LLC	Veterinary service	5,995,000	5,689,050	600,000	6,289,050
73	28	Munkh burgas	BH	Baatsagaan	C	meat production	15,152,000	10,764,700	3,500,000	14,264,700
74	29	Utiin urlal /Tsagaan turuut	BH	Galuut	C	P&S/skin products/felt shoes	7,034,000	6,853,100	552,600	7,405,700
75	30	Ikh bogd Urgun	BH	Bayangovi	C	P&S/fuel brick	12,500,000	4,710,000		4,710,000
76	31	Gan bogd /laboratory	BH	Bayanhongor	LLC	Veterinary service	2,016,200	1,580,000		1,580,000
BH TOTAL							133,750,200	113,215,600	18,664,100	131,879,700
77	1	Har hairhan	DG	Saihan ovoo	P	Vegetable	2,750,000	2,389,000		2,389,000
78	2	Togtokh tav	DG	Saintsagaan	HG	dairy products	2,920,000	1,270,000		1,270,000
79	3	Alagiin Devshih	DG	Deren	C	dairy/airag production	4,450,000	4,508,000		4,508,000
80	4	Esunbulag	DG	Adaatsag	HG	dairy products	2,720,000	2,056,500		2,056,500
81	5	Shine sanaa	DG	Adaatsag	P	dairy products	2,892,400	1,800,630		1,800,630
82	6	Bulag	DG	Saintsagaan	HG	meat production	14,830,000	13,992,600		13,992,600
83	7	Busiin hugjil	DG	Saintsagaan	C	meat product	14,410,000	11,108,650	2,562,350	13,671,000
84	8	Aduunii hiimori	DG	Delgerhangai	HG	meat product	13,600,000	12,690,000		12,690,000
85	9	Eviin huch	DG	Govi ugtaal	HG	meat product	8,320,000	9,319,600		9,319,600
86	10	Oldokhiin Devjikh	DG	Khuld	C	meat production	8,040,000	8,045,000		8,045,000

87	11	Tsagaan chuluut	DG	Deren	HG	meat product	25,590,000	12,000,800		12,000,800
88	12	Logiin Gobi	DG	Saintsagaan	C	meat production /pork	3,978,000	0		0
89	13	Uul	DG	Khuld	HG	meat product	7,230,500	7,250,000		7,250,000
90	14	Gal Michid	DG	Luus	C	felt processing	6,180,000	6,217,000		6,217,000
91	15	Shuvuutai hairhan	DG	Khuld	C	felt products	6,000,000	3,068,530		3,068,530
92	16	Shar shuvuutai	DG	Khuld	HG	felt products	6,000,000	4,262,000		4,262,000
93	17	Ikh buurtsag	DG	Saikhan-ovoo	P	felt products	2,850,000	2,880,000		2,880,000
94	18	Halzan dalai	DG	Erdene dalai	C	tourism/ger camp	3,800,000	3,781,000		3,781,000
95	19	Altgana ulziit	DG	Ulziit	C	veterinary service	9,434,000	9,520,000		9,520,000
96	20	Ugtaal chandmana	DG	Govi-ugtaal	C	veterinary service	8,050,400	9,207,600		9,207,600
97	21	Borjigon Erdene	DG	Bayanjargalan	LLC	veterinary service	9,924,000	10,432,000		10,432,000
98	22	Togrogiin Igeltsel	DG	Khuld	C	trade/sale of raw materials/goods	45,928,000	34,696,600	2,595,944	37,292,544
99	23	Buyanbulag	DG	Ulziit	C	P&S/shoes making	5,900,000	2,164,000	300,000	2,464,000
100	24	Delgerbulag	DG	Bayanjargalan	LLC	P&S/shoes making	6,580,000	3,921,000	420,000	4,341,000
101	25	Bayanteeg	DG	Saikhanovoo	P	P&S/household and livestock supply	4,694,500	4,359,100		4,359,100
102	26	Bayanbulag	DG	Ulziit	HG	P&S/bakery production	3,840,000	1,060,000		1,060,000
103	27	Arvindalai	DG	Saihan ovoo	C	vegetable	5,950,000	3,730,800		3,730,800
104	28	Shar ereg	DG	Saihan ovoo	C	vegetable	2,000,000	2,250,800		2,250,800
DG TOTAL							238,861,800	187,981,210	5,878,294	193,859,504
105	1	Goviin urgats/Bayan sharga	GA	Sharga	P	Vegetable production	6,210,000	6,210,790	330,000	6,540,790
106	2	Irvest ulaan/Tsagaan haalga	GA	Biger	P	Vegetable production	6,095,000	4,068,940	1,878,060	5,947,000
107	3	Gazriin uguuj	GA	Taishhir	C	Vegetable production	3,050,000	2,138,750	2,569,250	4,708,000
108	4	Khurimt bulag	GA	Khaliun	C	Vegetable production	1,955,000	0	755,000	755,000
109	5	Hamtiin khuch	GA	Biger	HG	dairy products	3,475,000	2,434,400	1,275,000	3,709,400
110	6	Chuluunbat	GA	Yusenbulag	HG	dairy products	3,581,000	3,491,000	150,000	3,641,000
111	7	Urnukh Buyan	GA	Yusenbulag	LLC	dairy products	7,235,500	6,530,500	1,670,000	8,200,500
112	8	Baatar dan	GA	Chandmana	C	dairy products	1,937,500	2,481,600	347,000	2,828,600
113	9	Durvun ovoljoo / Devshil	GA	Yusenbulag	P	dairy products	5,923,000	6,385,500	75,000	6,460,500
114	10	Buraat bulag	GA	Tugrug	C	dairy products	1,600,000	1,483,000	551,500	2,034,500
115	11	Shimt olon / Ulziit	GA	Yusenbulag	LLC	dairy products	4,125,000	4,171,500		4,171,500
116	12	Baga murun / Ikh murun	GA	Biger	P	felt products	3,190,000	2,685,500	543,000	3,228,500
117	13	Emeeltsiin baruun burgas/ Erdene uul	GA	Chandmana	C	felt products	11,515,000	11,542,500	159,500	11,702,000
118	14	Ovoon den	GA	Huhmorit	C	meat products	16,680,000	17,060,000		17,060,000
119	15	Tarian ovoo	GA	Delger	C	meat products	15,400,000	8,411,500	5,060,000	13,471,500
120	16	Sor manlai	GA	Delger	P	meat products/animal breeding		0		0
121	17	Alatau Altai	GA	Yusenbulag	LLC	dairy production	4,642,400	2,991,000	1,700,000	4,691,000
122	18	Usan zuil	GA	Tonhil	HG	tourism/Restaurant	8,269,000	8,122,000	200,000	8,322,000
123	19	AMT BAL	GA	Tseel	LLC	Veterinary service	13,660,000	10,350,000	350,000	10,700,000
124	20	Bat bukh	GA	Bugat	C	Veterinary service	7,470,000	7,538,400	317,600	7,856,000
125	21	Deed Oglog	GA	Tseel	C	Veterinary service	7,332,000	8,853,400	40,500	8,893,900
126	22	Gune bulag	GA	Jargalan	LLC	Veterinary service	5,636,000	6,503,000		6,503,000
127	23	Shunhan	GA	Chandmana	LLC	Veterinary service	5,948,500	6,238,720		6,238,720
128	24	Tsagaan baavgai	GA	Dariv	LLC	Veterinary service	5,986,000	6,292,000		6,292,000
129	25	Ajiin Gerel	GA	Altai	C	trade/gas station	21,670,000	14,486,410	4,040,000	18,526,410
130	26	Tsonj	GA	Delger	C	P&S/Lime	3,130,000	2,073,500		2,073,500
131	27	Tsagaan gol	GA	Bugat	C	veg/Hay	8,460,000	0	3,420,000	3,420,000
132	28	Altain devshil	GA	Tseel	C	P&S/bekary	9,777,600	3,020,250	5,422,900	8,443,150
133	29	Ikh ovoo trade	GA	Yusenbulag	LLC	Trade of dairy products	1,049,600	743,840	104,000	847,840

GA TOTAL						195,003,100	156,308,000	30,958,310	187,266,310
134	1	Aduut Gobi	UG	Hurmen	C	vegetable production	3,201,000	3,040,250	3,040,250
135	2	Nariin har	UG	Hanhongor	HG	vegetable production	940,000	1,288,750	1,288,750
136	3	Orgil bulag	UG	Hanhongor	HG	vegetable production	8,960,000	2,684,600	2,475,000
137	4	Honi hairhan/ Uuriin tuya	UG	Tsogt-Ovoo	C	vegetable production	800,000	450,000	450,000
138	5	Gobi Tulga	UG	Hanhongor	C	veg/fodder production	8,232,000	4,650,000	4,650,000
139	6	Jasrgalantiin itgeltse	UG	Bayandalai	C	veg/fodder production	3,335,000	2,480,000	2,480,000
140	7	Zuramtain devshil	UG	Bayandalai	P	veg/fodder production	2,385,000	1,885,000	1,885,000
141	8	Oyut	UG	Hanhongor	HG	dairy products	8,280,000	7,628,000	7,628,000
142	9	Bayan bayalag	UG	Nomgon	HG	dairy products	2,600,000	1,435,000	1,435,000
143	10	Duulga	UG	Hanhongor	HG	dairy products	950,000	2,599,000	2,599,000
144	11	Bayan-Undur	UG	Hurmen	HG	dairy products	2,575,000	1,982,950	1,982,950
145	12	Sarlag	UG	Bayandalai	HG	dairy products	3,760,000	2,800,000	2,800,000
146	13	Huren Hana	UG	Noyon	HG	felt products	2,314,500	2,443,250	2,443,250
147	14	Chandmana erdene	UG	Bayandalai	HG	felt products	3,000,000	2,220,000	2,220,000
148	15	Bayan hairhan	UG	Hanhongor	HG	felt products	690,000	515,000	515,000
149	16	Anh san	UG	Bulgan	C	tourism	5,200,000	5,066,050	5,066,050
150	17	Altan goviin shiree	UG	Bulgan	C	tourism	9,900,000	5,540,000	5,540,000
151	18	Avrah	UG	Hanhongor	HG	tourism	3,860,000	5,835,000	5,835,000
152	19	Serven hairhan	UG	Sevrei	HG	tourism/Hotel service	3,520,000	3,078,200	3,078,200
153	20	Darkhan govi 2 / Saijrakh	UG	Hanhongor	LLC	tourism	10,275,000	8,200,000	8,200,000
154	21	Bayan bilgeh	UG	Tsogt-Ovoo	HG	animal breedinf/ goat	2,795,000	2,850,000	2,850,000
155	22	Naran Zug Melmii	UG	Noyon	P	veterinary services	3,071,500	3,791,800	3,791,800
156	23	Bumbat urjih	UG	Tsogttsetsii	P	veterinary services	2,287,000	1,305,950	1,305,950
157	24	Han javhlant	UG	Hanbogd	C	veterinary services	1,643,200	1,672,128	1,672,128
158	25	Sod bayalag	UG	Nomgon	HG	trade	11,880,000	10,462,000	10,462,000
159	26	Enger Tsagaan Khairhan	UG	Tsogttsetsii	LLC	trade/gas station	100,700,000	122,390,000	5,000,000
160	27	Galbiin hugjil	UG	Hanbogd	C	trade	16,578,000	7,950,300	7,950,300
161	28	Harmagtain buur hairhan	UG	Nomgon	C	P&S/wooden products	2,970,000	1,441,000	1,441,000
162	29	Goviin buyn delgerekh	UG	Tsogt-Ovoo	C	animal breeding/fodder production	5,350,000	4,744,000	4,744,000
UG TOTAL						232,052,200	222,428,228	7,475,000	229,903,228
GRAND TOTAL						1,279,408,570	1,093,855,118	124,978,504	1,218,833,622

Appendix 2:

VETERINARY EPIDEMIOLOGY TRAINING

for

**Dundgobi, Omnogobi, Ovorhangai &
Bayanhongor Aimag
Veterinary Laboratory Staff**

Final Report

Amanda E. Fine, V.M.D.

December 30, 2005

**MERCY CORPS
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Final Report

Title: Veterinary Epidemiology Training for Dundgobi, Omnogobi, Ovorhangai & Bayanhongor Aimag Veterinary Laboratory Staff

Dates of Assignment: October 1, 2005 – November 30, 2005 for 14 days

Consultant: Amanda E. Fine, V.M.D., Veterinary Epidemiologist

Translator: J. Baigalmaa, M.D., Veterinary/Medical Translator

Project Advisor: Dan Schar, V.M.D., Mercy Corps Technical Advisor, Veterinary Services

Section1: Veterinary Epidemiology Training in Mongolia

Epidemiology is defined as the study of the distribution and determinants of disease in specified populations, and the application of this study to the control and prevention of disease. Veterinarians in Mongolia receive very limited training in epidemiology. Applied veterinary epidemiology in Mongolia is focused on the collection of data on various diseases of veterinary and public health importance, but the analysis of this data and translation of the findings into disease prevention programs and policy is rare.

Section 2: Mercy Corps Veterinary Epidemiology Training for Gobi Aimag Veterinary Laboratory Personnel

As outlined in the Scope of Work (Appendix 1), the objective of this consultancy was to provide the veterinary epidemiology component of a comprehensive re-training program for Aimag Veterinary Laboratory staff from Ovorhangai, Bayanhongor, Omnogobi and Dundgobi, held at the State Central Veterinary Laboratory in Ulaanbaatar, Mongolia, in October and November of 2005. The veterinary epidemiology component was designed to complement the training on modern veterinary disease diagnostic techniques and equipment delivered during preceding sessions.

The veterinary epidemiology training began with a basic introduction to descriptive epidemiology. This introduction was followed by “case study” examples demonstrating the way in which applied epidemiology can improve veterinary service delivery, and in particular the effectiveness of veterinary laboratory staff in identifying the distribution and impact of important livestock diseases as a first step in the design of disease control and prevention strategies. The current procedures for disease surveillance and reporting in Mongolia were assessed and deficiencies were identified. Participants were then divided into four groups to design a disease database using Excel software and the computers provided.

The second component of the training focused on analytic epidemiology. Again, case studies were used to demonstrate the use of analytic epidemiology in veterinary disease identification, control and prevention. This introduction was followed by a series of exercises performed by the participants to practice the use of 2 x 2 tables, the calculation of odds ratios and relative risk and the interpretation of the results obtained.

Anthrax, brucellosis, Foot and Mouth Disease (FMD), contagious agalactia (*Mycoplasma*) and bovine tuberculosis were used as examples in case studies and exercises throughout the training course. These diseases are considered 5 of the most important livestock and public health diseases in Mongolia and the Gobi region. The diagnosis of these diseases was covered in earlier components of the aimag veterinary laboratory training. By using these same diseases as examples it was possible to demonstrate the direct connection between the data collected by veterinary diagnosticians in the laboratory and the understanding of the epidemiology of disease.

The final component of the veterinary epidemiology training consisted of reviewing the principles of descriptive and analytic epidemiology with a focus on study design and sample size calculation. A brucellosis prevalence study, performed in Bayanhongor aimag in 2000, was used as an example. Participants were then given a series of disease scenarios and problem solving exercises which included study design and sample size calculation and random sample selection. Participants were shown how to use Excel and the epidemiology software provided to assist with study design (sample size calculation), database management and essential epidemiological calculations.

An outline of the veterinary epidemiology training is provided as part of the assignment and training schedule in Appendix 2. Copies of the materials distributed during the veterinary epidemiology sessions are provided in Appendix 3 and a copy of the power point presentation used for the lecture component of the training is provided in Appendix 4.

Section 3: Reaction of Veterinary Epidemiology Training Participants

The laboratory veterinarians from Ovorhangai, Bayanhongor, Omnogobi and Dundgobi aimags were very attentive and interested throughout the epidemiology training sessions. They grasped the basics of descriptive epidemiology very quickly and were able to identify deficiencies in the current system of disease reporting. They all designed veterinary disease databases that incorporated the collection of information necessary to apply descriptive epidemiology which consisted of information about the individual animals being tested, the location of the diseased animals and the time span in which the animals displayed clinical signs, were tested, and diagnosed.

Analytic epidemiology and its application was a new area of study for the laboratory veterinarians. They are familiar with recording data based on the results of the laboratory tests that they perform but have very little experience in data analysis. They are never required to perform any data analysis beyond generating summary statistics for some of the laboratory tests they run. These summary statistics are primarily in the form of averages or counts of the number of animals that tested positive for a particular disease. Comparing diseased and non-diseased groups, identifying risk factors for disease and designing intervention practices or further surveillance was a new concept for most participants.

Despite the novelty of the concepts of analytic epidemiology, the laboratory veterinarians absorbed the material and performed the exercises correctly. As is common anywhere when these concepts are presented for the 1st time, there was a degree of skepticism surrounding the usefulness of some of the epidemiological tools presented, but this generally subsided as more case studies were presented and exercises were performed.

The degree of competence and skill across the participants was very similar. They represented laboratory specialists in the areas of serology (virology), parasitology, and microbiology. Those with more advanced computer skills were more comfortable using Excel and the epidemiology software provided but all participants were able to use the computers to assist with the study design and problem solving exercises.

Constraints Identified:

All of the participants recognized the potential of applying the descriptive and analytical epidemiological skills that they acquired during the training to their daily veterinary laboratory work. I suspect, however, that the degree to which they are able to apply what they have learned will be based on the instructions they receive from other aimag veterinary laboratory personnel (often the head of the aimag veterinary department) in charge of disease data collection. What the aimag veterinary department reports is based on instructions from the Epidemiology Section of the Veterinary Department of the Mongolian Ministry of Food and Agriculture (MMFA).

The second constraint identified by the participants was their inability to control the way in which livestock herds are selected for sampling under the current system in which private soum veterinarians submit a certain number of blood, tissue or milk samples for

testing per year. This situation can be corrected by increasing the role aimag laboratory veterinarians play in the design of disease surveillance studies and the selection of individuals or herds for testing. Soum veterinarians can be given a sampling plan, instructions for collecting samples and directions on procedures to facilitate a random selection of sampling units as well as the collection of accurate descriptive data.

The final constraint identified by participants was the limited financial and human resources available to conduct disease surveillance and perform studies on a scale that is statistically relevant and representative of the population. These constraints are not unique to Mongolia. The presence of limited resources only increases the need to be efficient when planning disease surveillance and control programs. Some of the basic components of epidemiology, including the selection of a truly random sample when designing disease surveillance studies and prioritizing disease control programs based on those that have the greatest economic and public health impact, will contribute to the design of a more efficient veterinary disease control and prevention program

Section 4: Applied Veterinary Epidemiology: Current State and Future Possibilities

The degree to which epidemiologic principles and tools are applied within the veterinary sector in Mongolia is dependent in large part on directives from the Epidemiology Section of the Veterinary Department of the Mongolian Ministry of Food and Agriculture (MFA) and to a lesser extent, the Central Veterinary Laboratory. Meetings with veterinarians from both these departments confirmed the role the two institutions play in directing livestock disease surveillance and the collection of data on livestock disease.

The veterinarians assigned to the epidemiology sections of the Veterinary Department of the MFA and the Central Veterinary Laboratory have significant administrative duties and handle the state-subsidized distribution of livestock vaccine and anti-parasitic drugs as well as the disease surveillance programs. As a result, the institutions focus on disease data collection and very little analysis of the data, or applied epidemiology, is done.

Opportunities exist to improve the current disease reporting system in collaboration with aimag veterinary laboratories and soum veterinarians. Disease data sheets provided by the Veterinary Department of the MFA and translated in Appendix 5, could be adapted for aimag-specific use with the inclusion of the type of information identified during the veterinary epidemiology training (location, species information, time span, risk factors, etc.). This process was begun during the training sessions. The next step would be to formalize the process for creating disease databases and the requirements for reporting and analysis.

Ultimately, the expansion of the application of epidemiology in the Mongolian veterinary sector will require an individual or department dedicated to the analysis of livestock disease data. This would likely lead to a change in the way in which disease data is collected and ultimately to a change in livestock disease control policy. The work done by Mercy Corps and others to improve the capacity of aimag laboratory veterinarians in

the field of disease diagnostics and epidemiology is an important first step. As the primary collectors of livestock disease information it is essential that they understand the principles of epidemiology and the importance of its application.

Section 5: Recommendations for Further Work in the Field

An important second phase to the upgrading of aimag veterinary laboratories would be a program that would ensure that the new equipment and acquired skills were used in a way that would not only reinforce the lessons learned during the training, but more importantly, that would have an impact on the health of livestock in the region and therefore the livelihoods of livestock herders.

An opportunity for the aimag laboratory veterinarians who participated in the veterinary epidemiology training to design and conduct an epidemiological study on a disease of importance to the livestock of their region would be an important follow-up to the multi-day re-training course conducted in October/November of 2005. The disease to investigate and the design of the study could be selected with input from local soum veterinarians and livestock herders in the region. The cooperation and involvement of both the soum veterinarians and the livestock herders would be an essential component of the field studies.

The aimag veterinary laboratories could request assistance where necessary from the Central Veterinary Laboratory and the Epidemiology Section of the Veterinary Department of the MFA. Financial support and technical assistance would be required in the planning, implementation and analysis phases of the epidemiological studies. This could be provided by the donor community and distributed regionally by different donors as was done during the upgrading of the aimag veterinary laboratories.

Section 6: Identified Constraints and Opportunities

The constraints associated with the immediate and large scale application of epidemiological principles and techniques in the veterinary sector in Mongolia are described under “Constraints Identified” in **Section 3**. The epidemiology training will improve the capacity of the participants to collect and analyze veterinary disease data and design field studies when given the opportunity to do so. The current incentives for aimag laboratory veterinarians to improve their data collection and perform data analyses are limited given the fact that it is the Epidemiology Section of the Veterinary Department of the MFA that designs current disease surveillance programs and directs the activities of aimag laboratories.

There is a general need across Mongolia, as is the case in many countries, for improved capacity in the area of epidemiology. This is true in both the veterinary and medical profession. There may be an opportunity, given the needs of both the veterinary and public health sector, to raise Mongolian government and international donor funds for

advanced training in the field of epidemiology. This would be a natural area of collaboration between the health and agricultural sectors in Mongolia and would facilitate the establishment of an epidemiology and health data analysis unit that could serve both sectors.

Section 7: Recommendations for Follow-Up Trainings

The veterinary epidemiology training created for the October/November, 2005, multi-day aimag laboratory veterinary training may be used (with the permission of Mercy Corps) by the “Veterinarians Without Borders-VSF” project in Mongolia in Arhangai aimag. VSF plans to include soum veterinarians, aimag laboratory veterinarians (including the head of department or person responsible for disease reporting) and the Epidemiology Section of the MFA Veterinary Department in these trainings. This combination of veterinarians across the veterinary structure in Mongolia in an epidemiology training session is one I would recommend and support. A number of the identified constraints to the application of epidemiology in the veterinary sector in Mongolia were linked to a lack of communication and coordination between soum, aimag and State veterinarians.

Follow-up training in 1) disease study design; 2) disease database management; and 3) disease data analysis will be necessary for the expansion of the use of applied veterinary epidemiology at the aimag and soum level. Further trainings should be linked to the design and implementation of specific studies, ideally across different regions, to take full advantage of the benefits of technical assistance in this area.

Appendix 1

SCOPE OF WORK

VETERINARY EPIDEMIOLOGY CONSULTANT AIMAG VETERINARY LABORATORY TRAINING

Requirements:

The consultant will possess the DVM or equivalent degree and have significant post-graduate training and experience in veterinary epidemiology. Such experience should include prior work in applied veterinary epidemiology as it relates to rural, pastoralist communities in developing countries. In particular, the consultant will have previous experience designing and conducting trainings in the foundation principles of veterinary epidemiology.

Objectives:

The consultant will design, organize and conduct the veterinary epidemiology training in Ulaan Baatar. The trainings will be delivered to appropriate State Central Veterinary Laboratory staff and Aimag Veterinary Laboratory staff from Ovorkhangai, Bayanhongor, Omnogobi and Dundgobi.

The training, with anticipated delivery over several days, will comprise the epidemiology component of a broader, multi-day course for veterinary laboratory staff covering modern veterinary diagnostics and related laboratory equipment. The epidemiology training is expected to be developed within the context of this broader course, with emphasis centered on an applied focus employing participants' newly acquired skills running diagnostic assays and using related equipment.

The overall scope of the training is intended to improve the capacity of veterinary laboratory staff in their stated mission of providing veterinary diagnostic services to their respective communities. In this regard, the training should address prevention and control of animal disease transmission with an additional focus on issues at the intersect of human and animal health, including zoonotic threats to public health.

The consultant will spend up to twelve working days designing and producing a curriculum that fulfills the stated goals. Where appropriate, the consultant will work with entities involved in the veterinary sector in Mongolia and solicit input that will direct the content of the trainings to fit the epidemiological factors unique to the south Gobi. The training curriculum should focus on the foundation principles of veterinary epidemiology within the framework of the above stated goals, and should include, as a minimum:

- An explanation of epidemiology, its function, purpose, application and core components
- An overview of the tools employed in applied epidemiology, including discussion of vaccination, cull, quarantine, and management/husbandry practices
- A presentation of concepts associated with epidemiological monitoring and surveillance
- Data collection, sampling techniques, and sample size, and the use of these concepts in designing a prevention monitoring program or response to infectious disease threat

- Computer modeling, and applied use of veterinary epidemiological software in statistical analysis of veterinary epidemiological data
- A discussion of economic and social costs of disease and benefits of control
- Demonstration of epidemiological principles using examples germane to Mongolia and the south Gobi, with potential focus on FMD, brucellosis, mycoplasma (contagious agalactia), and bovine tuberculosis.

Deliverables:

The consultant will provide:

1. A comprehensive report detailing the information garnered during meetings preceding the development of the curriculum. In addition to this background information, the report should include observations on the current state and future of applied veterinary epidemiology in Mongolia, recommendations for further work in the field, identified constraints and opportunities, and recommendations for follow up trainings.
2. The full complement of training materials developed during the course of the consultancy and which were distributed to participants during the training session.

The consultant will work closely with the Gobi II Rural Economic Development Adviser or Technical Advisor, Veterinary Services; the MC/Mongolia Program Director; appropriate personnel at the SCVL and any other consultants employed for the implementation of this work.

Reporting:

The consultant will report to the Mercy Corps Technical Advisor, Veterinary Services

Timeline:

The consultancy will be for an estimated three-week period, beginning on or about 17th October 2005 and ending on or about 4th November 2005. It is anticipated that the first 12 working days will be consumed by development and production of curriculum and training materials, and the final 3 working days will be used in delivery of the training. Preparation of materials may be carried out both on and off site, and over a timeframe that is most amenable to the consultant. The days will be normal working days (Monday through Friday) unless approved in advance by the MC/Mongolia Country Director.

Appendix 2:

Assignment and Training Schedule

October 3, 2005	Meeting with Dan Schar, Mercy Corps, Ulaanbaatar Testing, selection and download of epidemiology software
October 4, 2005	Outline Units 1-4; Select case studies; Design exercises
October 5, 2005	Unit 1 training materials
October 18, 2005	Unit 2 training materials
October 19, 2005	Unit 3 training materials
October 20, 2005	Unit 4 training materials
October 21, 2005	Meeting with Baigalmaa, translator; Transfer and explanation of training materials; Lecture preparation (Power Point presentation)
October 26, 2005	Problem solving exercises preparation
October 27, 2005	Meeting with the Epidemiology Section and Veterinary Department Staff, Ministry of Food and Agriculture <ul style="list-style-type: none">○ Dr. Orgil, Head of Veterinary Department○ Bolortuya, Epidemiology Section○ Altangerel, Epidemiology Section
October 31, 2005	Final preparation of lectures with exercises
November 1, 2005	Meeting with Central Veterinary Laboratory Staff (Badamsuren-Epidemiologist; Erdenkhuu-Director); Lecture room preparation; Training material packets
November 2, 2005	Day 1 of Veterinary Epidemiology Training
November 3, 2005	Day 2 of Veterinary Epidemiology Training
November 11, 2005	Completion of Special Instructions for Computer Applications (Unit 4)

Veterinary Epidemiology Training Schedule

DAY 1

November 2, 2005

1. Introduction to Epidemiology
 - a. Case Definition
 - b. Case Studies/Exercises
 - i. Agalactia
 - ii. Anthrax
 - iii. FMD
 - iv. Brucellosis
2. Descriptive Epidemiology
 - a. "Person" = Animal
 - b. "Place"
 - c. "Time"
3. Disease Surveillance
 - a. Exercise
 - i. Disease Database Critique
 - ii. Disease Database Creation (Excel)
4. Disease Survey
 - a. Case Study: Brucellosis
 - i. Sample Size
 - ii. Herd Selection
 - iii. Database Creation
 - iv. Disease Prevalence Calculation
 - b. Exercises
 - i. Mean
 - ii. Median
 - iii. Standard Deviation
 - iv. Sample Size Calculation

DAY 2

November 3, 2005

5. Analytic Epidemiology
 - a. Risk Factors for Disease
 - b. Definition of Relative Risk
 - c. Definition of Odds Ratio
6. Exercises
 - a. Calculating Relative Risk
 - b. Calculating Odds Ratios
7. Introduction of Epidemiology Software
 - a. Excel-graphing capabilities
 - b. SSIZE-sample size calculation
 - c. EPI Info-Relative Risk and Odds Ratio Calculations
8. Case Study: Brucellosis (Data Analysis)
 - a. Risk factors for livestock disease
 - b. Risk factors for human disease
 - c. Potential control and prevention measures
9. Study Design (Case Studies and Computer Applications)
 - a. Brucellosis: estimating prevalence
 - b. Anthrax: case control study
 - c. Agalactia: vaccine trial
 - d. Foot and Mouth: outbreak investigation
10. Disease Control and Prevention
 - a. Review of "Case Study" Diseases
 - i. Vaccination
 1. complete
 2. ring
 - ii. Test and Slaughter
 1. cost
 2. testing capabilities (false positive/false negative)
 - iii. Management Changes
 1. quarantine
 2. housing/location
 3. feed